

The Silent Cry of Healthcare Workers: A Cross-Sectional Study on Levels and Determinants of Burnout among Healthcare Workers after First Year of the Pandemic in Turkey

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ABSTRACT

Background: Although the acute phase of the pandemic is over, healthcare workers continue to face challenges. The aim of this study was to determine burnout levels and possible related psychological processes such as psychological flexibility, moral injury, and values among healthcare workers after the first year of coronavirus disease 2019 (COVID-19) pandemic.

Methods: A cross-sectional study was performed using an online survey distributed through social networks. A sample of 124 front line healthcare workers working during the pandemic, between January and April 2021, were included in the study. Multiple linear regression was used to identify predictors of all 3 burnout dimensions (emotional exhaustion, depersonalization, and lack of personal accomplishment).

Results: While 51.6% of healthcare workers experienced high levels of emotional exhaustion, 75.8% of them were found to have experienced high levels of lack of personal accomplishment. On the contrary, 81.5% of the participants reported low levels of depersonalization. Emotional exhaustion was predicted by total Depression Anxiety Stress Scale score ($P = .004$) and total Moral Injury Events Scale score was the only predictor of depersonalization ($P = .051$). Predictors of lack of personal accomplishment were the number of days worked in COVID-19 ($P = .001$), total Moral Injury Events Scale ($P = 0.004$), Valuing Questionnaire (VQ)-Obstruction ($P = .009$), and total Depression Anxiety Stress Scale score ($P = .002$). On the other hand, psychological flexibility did not predict any sub-dimension of burnout.

Conclusion: Healthcare workers had high levels of burnout after 1 year with the pandemic. Our findings highlight the importance of factors such as moral injury, values, and emotional distress which need to be taken into consideration to develop future interventions to treat and prevent burnout in healthcare workers.

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INTRODUCTION

Coronavirus disease 2019 pandemic has placed an unexpected and tremendous burden on health systems all over the world. Even if precautions suggest maintaining social distance, avoiding public spaces, and working from home to reduce spreading COVID-19, healthcare workers (HCWs) cannot apply these precautions because of the requirements of their profession. In addition, it is necessary for them to have direct contact with infected individuals. Under these difficult circumstances, HCWs are subjected to psychological and physical stress during the pandemic.¹ Healthcare workers responding to pandemics are also under increased psychological pressure due to

the unpredictable progress of the COVID pandemic, lack of information about long-term consequences, high contagiousness, and absence of specific treatment.² Healthcare providers also have to make difficult decisions about triage, hospitalization, and treatment in addition to the pain of losing their patients and colleagues. All these challenges, and many others, may contribute to emotional and physical exhaustion in HCWs. Considering the negative effects on job performance and job satisfaction as well as reducing the quality of life in HCWs, it becomes necessary to investigate burnout and related factors.

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Some published case reports and reviews have focused on protective factors and risk factors that might affect the psychosocial health of HCWs in the pandemic.³⁻⁷ Although quantitative research on this issue is limited,⁸ studies are usually about determining the levels of psychological difficulties such as burnout, depression, and anxiety. Duarte and Ivone⁹ evaluated the contributions of socio-demographic variables and psychological processes to burnout among HCWs. The study indicated that gender, marital status, parental status, and reduced salary were predictors of personal burnout. Also, being in front line working positions was found related to all 3 dimensions of burnout.⁹ Similarly, Lasalvia and Antonino¹⁰ examined burnout and related factors among HCWs. The results showed that the risk of burnout was higher in those caring for patients with COVID-19, having prior psychological problems, and having experienced a traumatic event related with COVID.¹⁰ In another study, Sakaoglu et al¹¹ investigated the relationship between socio-demographic characteristics and anxiety in the HCWs sample. Researchers determined that direct contact with the COVID-19 patient, contact time, and marital status affect anxiety levels.¹¹ Accordingly, Elbay et al¹² evaluated the relationship between socio-demographic characteristics and anxiety and depression levels in HCWs. They concluded that the excessive working hours, increased number of COVID-19 patients cared for, and lower levels of perceived competence during pandemic-related tasks correlated with increased anxiety, depression, and stress.¹²

Experiential avoidance is one of the coping strategies that individuals can use to provide relief from the intense emotional experiences that occur in stressful situations. Hayes et al¹³ define experiential avoidance as deliberate efforts to control the form, frequency, intensity, or duration of negative internal experiences (e.g. thoughts, emotions, bodily sensations, memories), even if it leads to move away from valued life goals.¹³ There is a growing literature suggests that experiential avoidance can be conceptualized as a pathological process related with maladaptive behaviors such as substance use¹⁴ and many forms of psychopathology.¹⁵ In this regard, the relationship between the concept of experiential avoidance and burnout has also been investigated in recent years. In 2 separate studies conducted with medical students¹⁶ and critical care

nurses,¹⁷ higher experiential avoidance was associated with higher levels of emotional exhaustion and depersonalization. As a contextual behavioral approach, acceptance and commitment therapy (ACT) has proposed “psychological inflexibility” as a model of psychopathology that takes experiential avoidance as a core process.¹⁸ Acceptance and commitment therapy aims to promote psychological flexibility defined as being in contact with the present moment, being more open to internal events like thoughts, feelings, and bodily sensations, and acting in line with the chosen self-values.¹⁹ Similar to researches that showed relations between experiential avoidance and burnout, it was also found that low psychological flexibility is associated with burnout.^{20,21} Ortiz-Fune et al²² demonstrated that psychological inflexibility predicted all 3 dimensions of burnout at the Spanish mental health workers. Ocal Demir et al²³ also showed the predictive effect of psychological inflexibility on burnout in HCWs of pediatric clinic. Consistently, evidence has shown that ACT interventions that increase psychological flexibility prevent the development of burnout and are also effective in its treatment.²⁴ Recently, Montaner et al²⁵ demonstrated that 6 weeks of ACT intervention increased psychological flexibility and reduced burnout in dementia caregivers. Puolakanaho²⁶ showed that a 8-week program based on ACT had a significant effect on decreasing burnout and improving psychological flexibility which mediated the decrease in burnout among healthcare unit employees.

One of the less-studied concepts in the burnout literature is moral injury.²⁷ Litz et al²⁸ defined morally injurious events as “perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations”. The repeated exposure to morally injurious events might result in moral injury. More commonly used for military personnel, the concept of moral injury has been described as a deep sense of transgression, including feelings of shame, grief, meaninglessness, and remorse from having violated core moral beliefs.²⁹ Also, Shay³⁰ conceptualized moral injury as a betrayal of justice by someone in a position of authority in a high-stakes situation. Among HCWs, moral injury has been related to the experience of desperation and sense of failure generating from their moral duties toward their patients, colleagues, and families. Health professionals reported moral injury, especially when they feel a threat to their ability to provide care by the hospital or clinic systems.³¹ Besides care and treatment responsibilities, HCWs also have to deal with risks brought about by exposure to the COVID-19 for their families and patients. Studies have shown that being stigmatized as vectors, exposed to physical assaults, and social isolation can lead to desperation, shame, and guilt among HCWs which can lead to moral injury.³²

Approximately 1 year after the first case was detected in Turkey in March 2020, HCWs are still faced with increasing caseloads, restricted annual leaves, and partial uncertainty

MAIN POINTS

- High burnout rates due to the COVID-19 are still present in the first year of the pandemic.
- Moral injury, which is an expected process in the pandemic where tough decisions are made, is one of the predictors of burnout.
- Decreased engagement in values-based behavior was also a predictor of burnout.
- Developing new intervention models targeting these areas will increase the well-being of healthcare workers and improve patient outcomes.

about treatment and preventive agents. In the light of previous studies, research on psychological processes that can predict burnout levels among HCWs will be helpful to guide the interventions to treat possible burnout symptoms. Therefore, the aim of the current study was to identify the prevalence of burnout in front line HCWs at the end of 1 year with the pandemic and to assess the psychological predictors of burnout. We hypothesized that higher levels of experiential avoidance, moral injury, emotional distress, and decreased engagement in values-based behavior would significantly predict burnout.

METHODS

Study Design

This study targeted front line HCWs working in pandemic inpatient and outpatient clinics or intensive care units during the COVID-19 pandemic in Turkey. An online survey was used to investigate levels and potential determinants of burnout, and the survey was distributed through social medical networks using a snowball technique.

Participants

The target population of the study consisted of doctors, nurses, anesthesia and radiology technicians, medical secretaries, healthcare assistants, and allied health personnel working in pandemic services or outpatient clinics in Turkey. Being between the ages of 18-65 and working face-to-face with COVID-19 patients were determined as the inclusion criteria; participants were excluded if they were on sick leave or not working actively in the COVID-19 pandemic. The survey reached 431 HCWs and 155 of them completed it. Thirty-one of these 155 participants were excluded from the study because they did not work in the COVID-19 clinics in any way. At the end, the study was conducted on 124 health care professionals [92 (74.2%) female, mean age = 33.3, SD = 6.37].

Procedures

Data were collected between January 2021 and April 2021 from state or private hospitals from all over Turkey. The study survey was created on the Google® Forms platform and delivered to the participants via social networks and vocational listservs with a link. Consent was obtained from all participants after they were informed about the study. The research was approved through the decision of the Ethics Committee of Bakirkoy Dr. Sadi Konuk Training and Research Hospital with a reference number 2020/452 on October 19, 2020.

Measures

1. **Acceptance and Action Questionnaire-II (AAQ-II):** AAQ-II is a 7-point, 7-item Likert-type scale developed to measure the differences in experiential avoidance and psychological flexibility among individuals. Higher scores indicate higher levels of psychological inflexibility

and experiential avoidance. Validity and reliability study of Turkish AAQ-II was conducted by Yavuz et al.³³

2. **Maslach Burnout Inventory (MBI):** MBI is a 7-point, 22-item Likert-type scale developed by Maslach and Jackson. It includes 3 subscales designed to measure the 3 components of burnout: emotional exhaustion, depersonalization, and personal accomplishment.³⁴ There is no total score and each of the subscales is assessed separately. The total score of personal accomplishment was calculated by summing the scores on all items after recoding reversed items. This total score indicated lack of personal accomplishment. Higher scores show higher levels of burnout for each subscale.³⁵ Cut-off scores for moderate and severe emotional exhaustion were ≥ 19 and ≥ 30 , respectively, for moderate and severe depersonalization ≥ 15 and ≥ 23 , respectively, and for moderate and severe lack of personal accomplishment ≥ 19 and ≥ 30 , respectively.³⁶ Turkish validity and reliability study of MBI was performed by Ergin. The Turkish language does not respond to the 7-point scale, therefore the original inventory was changed to a 5-point Likert type scale by authors.³⁷
3. **Depression Anxiety Stress Scale 21 (DASS-21):** DASS-21 is a 4-point, 21-item Likert-type scale developed to measure emotional distress in 3 dimensions of depression (e.g., loss of self-esteem/incentives and depressed mood), anxiety (e.g., fear and anticipation of negative events), and stress (e.g., persistent state of overarousal and low frustration tolerance).³⁸ Higher scores show higher levels of emotional distress. Validity and reliability study of Turkish DASS-21 was conducted by Sarıçam.³⁹
4. **Valuing Questionnaire (VQ):** VQ is a 7-point, 10-item scale with 2 subscales⁴⁰: progress and obstruction. Progress is defined as achieving a clear awareness of what is personally important and bringing them into action as values. Higher scores indicate congruence between one's values and actions. Obstruction reflects the disruption of valued living. Higher scores represent more disruption in living consistently with one's values. Turkish validity and reliability study of VQ was conducted by Aydın et al.⁴¹
5. **Moral Injury Events Scale (MIES):** MIES is a self-report 9-item scale that evaluates exposure to perceived violations committed by the respondent and/or others and perceived betrayals by other individuals.⁴² Higher scores indicate greater moral injury. Although the Turkish validity and reliability study of the scale has not been conducted yet, the internal consistency of the MIES was assessed using Cronbach alpha. Cronbach's alpha coefficient was found to be 0.807 for this study.

Data Analysis

Data from Google® Forms were exported in Microsoft Excel® 2021, version 16.57. Jamovi 1.6.18. (The jamovi project,

Table 1. Sample Characteristics of Participants (n=124)

| Characteristics | n | % |
|-----------------------------------|----|------|
| Marital status | 45 | 36.3 |
| Single | 73 | 58.9 |
| Married | 6 | 4.8 |
| Divorced/separated | | |
| Having children | 47 | 37.9 |
| Yes | 77 | 62.1 |
| No | | |
| Seniority of doctors | 6 | 7.2 |
| General practitioner | 24 | 28.9 |
| Resident | 46 | 55.4 |
| Specialist | 6 | 7.2 |
| Subbranch specialist | 1 | 1.2 |
| Associate professor or professor | | |
| Number of days worked in Covid-19 | 36 | 31.9 |
| 1-5 | 32 | 28.3 |
| 5-10 | 15 | 13.3 |
| 10-15 | 30 | 26.5 |
| 15-30 | | |

2021) was used for data analysis. Normality was verified by the histograms and multicollinearity was checked. After descriptive statistical analysis, the Pearson’s correlation test was used to investigate the relationship between variables. To evaluate potential predictors of burnout, forward multiple linear regression analysis was performed. Separate linear regression analyses were conducted for each dimension of MBI (emotional exhaustion, depersonalization, and lack of personal accomplishment). The independent variables for each multiple regression were the number of days worked with COVID-19 patients and variables obtained from study measures (total scores of AAQ-II, DASS-21, and VQ-Obstruction).

RESULTS

Sample Characteristics

A total of 124 HCWs completed the survey. Of these, 84 (67.7 %) were doctors, 27 (21.8 %) were nurses, 6 (4.8 %) were medical secretaries, and 7 (5.6 %) were other support staff. Of all the participants, 37 (29.8 %) reported to have had a COVID-19 infection while 101 (81.5 %) reported

having had a family member or close relatives infected. Of the participants, 75 (60.5 %) reported that they felt professionally incompetent and 81 (65.3 %) of them did not find the attitude of their administrators supportive. The characteristics of the participants are displayed in Table 1.

Results of Correlations, Levels of Burnout Dimensions, and Other Psychological Processes

As indicated in Table 2, emotional exhaustion was positively correlated with moral injury (MIES), distress (DASS-21), psychological flexibility (AAQ-II), and obstruction of valued living (VQ-Obstruction), with effect sizes ranging from $r=0.58$ to $r=0.26$. Also, depersonalization was positively correlated with MIES, DASS-21, AAQ-II, and VQ-Obstruction, with effect sizes ranging from $r=0.32$ to $r=0.28$. In contrast, lack of personal accomplishment score was not significantly correlated with any of the scales.

Depersonalization levels were found to be low in 101 (81.5%), moderate in 23 (18.5%) of the participants. Personal accomplishment levels were found to be moderate in 30 (24.2%) and high in 94 (75.8%) of the participants. Emotional exhaustion levels were found to be low in 7 (5.6 %), moderate in 53 (42.7 %), and high in 64 (51.6 %) of the participants.

Results of Regression Analyses

To explore the predictors of burnout, a separate multiple linear regression analysis was conducted for each burnout dimension (Table 3). The predictors were identified as the number of days worked in COVID-19, moral injury (MIES), distress (DASS-21), psychological flexibility (AAQ-II), and obstruction of valued living (VQ-Obstruction).

When the dependent variable was determined as emotional exhaustion, the total explained variance was 33%, ($P < .001$). Only total DASS score was found to be a significant predictor of emotional exhaustion ($P=.004$). When the dependent variable was determined as depersonalization, the model explained 16% of the total variance ($P < .001$) and total MIES score was a statistically significant predictor for depersonalization ($P=0.051$). Finally, lack of personal accomplishment was assigned as a

Table 2. Correlation Matrix

| | M (SD) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|-----------------------------------|-------------|--------|---------|-------|--------|--------|--------|---|
| 1.Emotional exhaustion | 30.0 (7.9) | - | | | | | | |
| 2.Depersonalization | 11.4 (4.1) | 0.50** | - | | | | | |
| 3.Lack of personal accomplishment | 32.2 (3.6) | -0.14 | -0.34** | - | | | | |
| 4.VQ-Obstruction | 16.0 (6.3) | 0.50** | 0.32** | -0.15 | - | | | |
| 5.AAQ-II | 24.5 (9.34) | 0.42** | 0.28** | -0.07 | 0.59** | - | | |
| 6.DASS-21 | 25.7 (14.4) | 0.58** | 0.32** | 0.07 | 0.76** | 0.62** | - | |
| 7.MIES | 30.8 (8.9) | 0.26* | 0.32** | -0.14 | 0.37** | 0.34** | 0.36** | - |

Correlation matrix, * $P < .05$, ** $P < .001$; AAQ-II: Acceptance and Action Questionnaire-II, MIES: Moral Injury Events Scale, DASS-21: Depression Anxiety Stress Scale-21, VQ: Valuing Questionnaire.

Table 3. Multiple Linear Regression Analysis for Each Burnout Dimension

| | Emotional Exhaustion | | | Depersonalization | | | Lack of Personal Accomplishment | | |
|-----------------------------------|----------------------|----------------|------|-------------------|----------------|-------|---------------------------------|----------------|-------|
| | B | R ² | P | B | R ² | P | B | R ² | P |
| Number of days worked in COVID-19 | 0.026 | 0.33 | .74 | -0.167 | 0.16 | .06 | 0.282 | 0.22 | .001* |
| VQ-Obstruction | 0.154 | | .22 | 0.168 | | .24 | -0.366 | | .009* |
| AAQ-II | 0.097 | | .35 | 0.095 | | .41 | -0.109 | | .33 |
| DASS-21 | 0.379 | | .00* | 0.018 | | .89 | 0.440 | | .002* |
| MIES | 0.008 | | .92 | 0.190 | | .051* | -0.186 | | .04* |

Multiple linear regression analysis * $P < .05$; AAQ-II: Acceptance and Action Questionnaire-II, MIES: Moral Injury Events Scale, DASS-21: Depression Anxiety Stress Scale-21, VQ: Valuing Questionnaire.

dependent variable and the total explained variance was 22 % ($P < .001$). The number of days worked in COVID-19 ($P = .001$), total MIES ($P = .004$), VQ-Obstruction ($P = .009$), and total DASS scores ($P = .002$) were significant predictors for lack of personal accomplishment.

DISCUSSION

After 1 year in the pandemic, we conducted a study to assess burnout levels among health professionals in Turkey to identify possible related psychological processes. We found that a significant portion of HCWs had high levels of emotional exhaustion (51.6%) and lack of personal accomplishment (75.8%). On the contrary, depersonalization levels were found to be low in 81.5% of the participants. During the current pandemic, several studies have concluded that burnout levels were high among HCWs. In a study from Italy, moderate to severe levels of emotional exhaustion were found in 67% of the sample, depersonalization was found in 26% of the participants, and low personal accomplishment was found in more than 60% of the participants.⁴³ In a study from Greece that evaluated the psychological well-being among HCWs during the pandemic, 35.3% of the participants had high levels of emotional exhaustion, 80.6% had low levels of depersonalization, and lack of personal accomplishment was recorded in 44.5% of the participants.⁴⁴ The variation of the reported burnout levels among countries may be related to differences in the healthcare systems, access to personal protective equipment, and cultural and socioeconomic disparity. However, it is difficult to compare the mean scores of burnout with the previous literature because the cut-off score of the Turkish MBI, which is a 5-point Likert scale, is different. Although our findings support the results of previous studies,^{45,46} it is quite remarkable that the level of burnout is still high even though it has been almost a year since the first case was detected.

Factors such as marital status, parental status,⁴³ female gender,⁹ psychological comorbidities, perceived support from the social environment, fear of infection,⁴⁶ being a nurse,⁴⁶ long work hours,⁴⁶ working on the front line,⁹ and constant contact with COVID-19⁴³ were found to be related

with or contribute to burnout. In addition, descriptive studies that found high levels of depression and anxiety in HCWs were also conducted.^{9,47} Although all these variables are determinants in burnout, the psychological processes that can be intervened clinically have not received enough attention. Multiple linear regression analysis was applied for each burnout dimension to identify these possible psychological processes that predicted burnout.

The regression model indicated that higher levels of emotional distress (anxiety, depression, and stress) were a significant predictor for emotional exhaustion and lack of personal accomplishment. The relationship between burnout and anxiety/depression symptoms is well-known in HCWs.⁹ A study from Italy reported that burnout prevalence is related with the mood symptoms among HCWs during the pandemic and, undetermined distress may lead to long-term undesired psychiatric outcomes.⁴⁷ Also, burnout, anxiety, and depression can negatively affect the staff individually as well as patient outcomes.^{48,49} Shanafelt et al⁴⁹ in their research among surgeons revealed that perceived medical errors were negatively related to depression and to all 3 domains of burnout. They found that each 1-point increase in emotional exhaustion was associated with a 5% increase in the likelihood of reporting an error. Also, each 1-point increase in depersonalization was associated with an 11% increase in reported error. Shanafelt et al⁵⁰ in another study underlined how distress impacts the surgeon's decision to quit and stated the importance of burnout and depression on continuity in health services. Effective interventions targeting emotional distress, such as anxiety, depression, and stress, to support HCWs may increase not only the quality of life of HCWs but also the quality of health care by preventing emotional exhaustion and perception of lack of personal accomplishment.

Depersonalization, is another challenging dimension of burnout, refers to dehumanized attitudes toward patients and unresponsiveness to them that may end up with detachment from job.⁵¹ As with emotional exhaustion, depersonalization is associated with many negative consequences such as suboptimal patient care, medical errors, and longer recovery times for hospitalized patients post-discharge.^{49,52} In our study, depersonalization is

only predicted by moral injury. Also, moral injury was a significant predictor of lack of personal accomplishment. To our knowledge, this is the first study to explore moral injury symptoms among HCWs in Turkey. Considering that HCWs faced many difficulties during the pandemic, including making hard decisions about their patients, moral injury can be expected. Not being able to do anything to save their patients when they are dying and decisions about triage in crisis situations can lead to moral emotions like anger, shame, guilt, and blaming thoughts.^{53,54} Avoidance of these emotions and thoughts results in moral injury and impacts an individual's functionality.⁵⁵ In other respects, HCWs may experience moral injury as a consequence of being faced with discrimination and threats. They may feel betrayed by the people they serve during the pandemic.⁵⁴ As our results indicate, moral injury is substantial by itself and also predicts burnout. Studies conducted during the COVID-19 pandemic have revealed that moral injury has a considerable effect, especially on front line HCWs.^{54,56} Litam et al⁵⁶ found a strong relationship between burnout and secondary traumatic stress, along with a moderate relationship between burnout and moral injury in front line HCWs. In another study that evaluated the relationship between moral injury and burnout among Chinese HCWs, moral injury symptoms were found to be correlated with higher clinician burnout, greater psychological distress, and lower levels of subjective well-being.⁵⁴ The fact that moral injury is a predictor of the depersonalization dimension of burnout in this study supports the literature that reveals the relationship between burnout and moral injury. All these findings indicate that it is vital to be aware of moral injury and its effects on HCWs, which are not easy to notice. It appears essential to develop interventions targeting moral injury during and after the pandemic that may have a significant impact to prevent clinician burnout. Also, creating a triage committee, supportive hospital administration, and teamwork-oriented working arrangements may be helpful to prevent moral injury symptoms.

In addition to the above-mentioned predictors (increased levels of moral injury and emotional distress), the number of days worked in COVID-19 and level of disengagement in values-based behavior were predictors of lack of personal accomplishment. Lack of personal accomplishment indicates one's self-evaluation of being inadequate and feelings of failure to help patients with their problems.⁵⁸ The person believes that his/her effort is useless and becomes intimidated because of perceived inadequacy.⁵⁹ The relationship between long work hours and burnout is well-known among HCWs.¹⁷ In a study by Pappa et al.⁴⁶ a predictor of all 3 components of burnout was long work hours among HCWs during the pandemic. Interestingly, in our study number of days worked in COVID-19 was only associated with a low sense of personal accomplishment. Due to the increased workload in COVID-19 clinics, time available to participate in educational conferences,

training and the time that the individual spares for personal development decreased. This may have contributed, from the perspective of the personal accomplishment dimension, to burnout by increasing the person's perception of inadequacy. It may also have been influenced by uncertainties about COVID-19 treatment and management. In this case, simply reducing the working hours will not be sufficient to reduce the perception of lack of personal accomplishment.⁶⁰ In addition to psychotherapeutic interventions, it may be useful to ensure that residents continue their routine training processes and to organize meetings on COVID-19 treatment updates.

Values are defined as an individual's freely chosen orientations (e.g., helping people, togetherness with colleagues) that influence daily behaviors, goals, and activities (e.g., treating a seriously ill patient, supporting colleagues).⁶¹ We found that decreased engagement in values-based behavior is one of the predictors of lack of personal accomplishment. Prudenzi et al⁶² showed the predictor effect of values (obstruction) on psychological distress and physical fatigue in HCWs. Saito et al⁶³ associated higher work values with improvements in burnout in their study conducted among nurses. There is also some research showing that burnout is decreased after value-based interventions.^{26,64} However, this is the first study that examined the relationship between engagement in valued actions and burnout among HCWs during the COVID-19 pandemic, to the best of our knowledge. Decreased contact with values may decrease the actions through a valued direction, resulting in an increase in the perception of inadequacy that can lead to burnout. This experienced burnout (lack of personal accomplishment) can create a vicious cycle in which the perception of inadequacy increases. As a result of this cycle, an individual may be unmotivated to work. Developing values-based interventions for HCWs during the pandemic may help both to reduce burnout and improve patient outcomes.

Psychological inflexibility was related with higher levels of emotional exhaustion and depersonalization in this study, confirming the results described in the previous studies.¹⁷ Efforts to control negative emotions and avoiding negative situations may have consequences such as decreased well-being in HCWs and decreased quality of care beyond burnout.¹⁷ As Ortiz-Fune et al²² showed in their research among mental health professionals, we expected psychological inflexibility to predict burnout. Contrary to our hypothesis, psychological inflexibility did not predict burnout in this study. Relatively small sample size of our research may have caused this difference from the literature. Further research including a larger sample is needed.

Limitations

Although our research is valuable in terms of evaluating the psychological state of HCWs about 1 year after the acute period of pandemic, for which there is not enough

information and consequently the healthcare system has not yet developed adaptive methods to deal with COVID-19, it has several limitations. First of all, the voluntary participation in research might have caused a selection bias as well as the sample being occupationally heterogeneous, therefore the respondents may not be representative of the entire population. Cross-sectional study design doesn't allow tracking the changes in processes that are the subject of our research, for this reason we are unable to speculate on whether there have been any changes since the beginning of the pandemic. We used online forms to minimize face-to-face interactions and facilitate the participation of HCWs working hard during this time of crisis. Since we used a self-report questionnaire, no evaluation was made by mental health professionals. The relatively low sample size did not allow statistical analysis for modeling burnout.

CONCLUSION

In conclusion, this study shows that HCWs are still at high risk of experiencing burnout or psychological distress due to the COVID-19 pandemic, despite the time elapsed. Further, our study underlined the importance of values engagement, moral injury, and emotional distress as predictors of burnout in HCWs. More research is needed to develop new intervention models to support HCWs during the COVID-19 outbreak. Our findings may provide a basis for the development of these intervention models.

Ethics Committee Approval: Ethics committee approval was received from the Ethics Committee of Bakirkoy Dr. Sadi Konuk Training and Research Hospital with a reference number 2020/452 on October 19, 2020.

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